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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,980	06/02/2000	Lizhi Wang	80398.P322	5683

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EXAMINER
HESSELTINE, RYAN J

ART UNIT	PAPER NUMBER
2623	3

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/585,980	WANG, LIZHI	
	Examiner	Art Unit	
	Ryan J Hesseltine	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 June 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. This application lacks formal drawings. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings.

2. Color photographs and color drawings are acceptable only for examination purposes unless a petition filed under 37 CFR 1.84(a)(2) is granted permitting their use as acceptable drawings. In the event that applicant wishes to use the drawings currently on file as acceptable drawings, a petition must be filed for acceptance of the color photographs or color drawings as acceptable drawings. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and an amendment to the first paragraph of the brief description of the drawings section of the specification which states:

> The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the U.S. Patent and Trademark Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings have been satisfied.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4, 5, 8, 12, 15, 16,19, and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Kinjo (USPN 5,629,752) in view of Wang et al. (USPN 5,802,361), hereafter Wang, both cited on applicant's IDS.

5. Regarding claims 1 and 23, Kinjo discloses a method of determining at least one candidate patch for human faces in a color graphic image (column 19, line 18-25), comprising: determining a first area wherein a color gradient (changing differential values) has a low value (exclude the regions in which differential values change regularly; column 18, line 65 to column 19, line 17); and determining a second area wherein an intensity value (density contrast) has a high value (exclude regions whose density contrast is less than or equal to a predetermined value; column 18, line 48-64). Kinjo discloses that these steps are performed one after another (see figure 3b, steps 152-162), but does not explicitly disclose that a logical AND is performed on the first and second areas to create a third area or selecting portions of the third area with suitable hue saturation.

6. Wang discloses a method and system for searching graphic images and videos wherein images are analyzed to extract various statistical abstractions to be related to semantically meaningful abstractions that a user may use to describe the image (column 8, line 20-28). Wang goes on to disclose that the user may search for motion, color, or a texture as well as a specific object such as a human face (column 12, line 36-38) and that the user may search for multiple attributes by performing a logical AND (conjunction) on a first area containing a specific attribute (such as low color gradient) and a second area containing another attribute (such as high intensity) to create a third area including both desired attributes (column 17, line 9-24). Wang also discloses selecting portions of said third area with suitable hue saturation (column 11, line

32-46) to form said at least one candidate patch (column 17, line 38-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform a logical AND on a first area and a second area to create a third area and select portions of the third area with suitable hue saturation as taught by Wang in order to designate areas of an image by searching for a combination of specific attributes, such as with smooth color gradient and high intensity values as well as designating a specific color range (column 5, line 11-20).

7. Regarding claim 12, Kinjo discloses a system configured to determine at least one location of a human face in a color graphic image (column 19, line 18-25), comprising: a color gradient map configured to indicate true where a color gradient (changing differential values) has a low value (exclude the regions in which differential values change regularly; column 18, line 65 to column 19, line 17); an intensity map configured to indicate true where an intensity value (density contrast) has a high value (exclude regions whose density contrast is less than or equal to a predetermined value; column 18, line 48-64). Wang discloses (see above discussion of claim 1 and 23) a combined map (conjunction) configured to indicate true where said color gradient map is true and said intensity map is true (column 17, line 9-24); and at least one candidate patch selected from said combined map (column 17, line 38-42), wherein said candidate patches each have suitable hue saturation (column 11, line 32-46).

8. Regarding claims 4 and 15, Kinjo discloses that said determining said second area (density) uses a second threshold value comparison (column 17, line 33-42).

9. Regarding claims 5 and 16, Kinjo does not explicitly disclose that said second threshold is determined by normalization, but does disclose that the average density of the image is calculated and it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use the average density as the predetermined threshold for binarization (column 17, line 4-9).

10. Regarding claims 8 and 19, Kinjo discloses fitting an ellipse (elliptical region) to one of said at least one candidate patch (column 21, line 21-28).

11. Claims 2, 3, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinjo in view of Wang as applied to claims 1 and 12 above, and further in view of Eleftheriadis et al. (USPN 5,852,669), hereafter Eleftheriadis, cited on applicant's IDS.

12. Regarding claim 2 and 13, neither Kinjo nor Wang disclose that the first area pertaining to a low color gradient is determined using a threshold. Eleftheriadis discloses an automatic face and facial feature location detection system wherein a gradient magnitude image is obtained by generating the magnitude of the gradient at each pixel and binarizing the edges using a threshold circuit (column 6, line 24-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine an area having a low color gradient using a threshold as taught by Eleftheriadis in order to provide a fixed, possibly adjustable, distinction between areas having high and low color gradients.

13. Regarding claims 3 and 14, Eleftheriadis does not explicitly disclose that the threshold value is determined by normalization, but normalization is a common method of determining a threshold for any operation and it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the threshold by normalization.

14. Claims 6, 7, 9-11, 17, 18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinjo in view of Wang as applied to claims 1, 8, 12, and 19 above, and further in view of Lobo et al. (USPN 5,781,650), hereafter Lobo, cited on applicant's IDS.

15. Regarding claims 6 and 17, neither Kinjo nor Wang disclose that said third area is eroded or that said combined map includes an eroded boundary. Lobo discloses a system for automatic feature detection and age classification of human faces in digital images including a face template that is used for oval-fitting by the use of a potential image of an edge where a morphological operator first broadens the image's similar intensity regions, then narrows (erodes) the similar intensity regions in a copy of the image, and finally the narrowed image is subtracted from the broadened image (column 4, line 44-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to erode similar intensity regions as taught by Lobo in order to remove stray pixels and to isolate edges for detection.

16. Regarding claims 7 and 18, Lobo discloses that said eroding (narrowing) is morphological (column 4, line 49-63).

17. Regarding claims 9 and 20, neither Kinjo nor Wang explicitly disclose determining if said ellipse is a bad fit to said at least one candidate patch or that said ellipse includes a degree of fit measure. Lobo discloses an oval fitting operation including iteratively updating the oval center position and the oval axes half-lengths until the total energy stabilizes around a minimum value and a final fit has been reached (column 5, line 39-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the degree of fit of an ellipse about a candidate patch as taught by Lobo in order to ensure that the ellipse/oval is properly positioned and scaled to include the optimum amount of information for personnel identification or the like.

18. Regarding claims 10 and 21, Lobo discloses further processing said at least one candidate patch when said ellipse is a bad fit (iteratively update until total energy stabilizes; column 5, line 39-48).

19. Regarding claims 11 and 22, Kinjo discloses determining if said one of said at least one candidate patch is too smooth (column 18, line 54-63).

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 5,450,504 to Calia discloses a method for finding a most likely matching of a target facial image in a database of facial images including a threshold determination of gradient areas. USPN 5,787,186 to Schroeder discloses a biometric security process for authenticating identity and credit cards, visas, passports and facial recognition including a Sobel filter or gradient to determine the contour edges of a face. USPN 5,828,769 to Burns discloses a method and apparatus for recognition of objects via position and orientation consensus of local image encoding including normalizing with respect to changes in contrast using gradients. USPN 6,188,777 to Darrell et al. discloses a method and apparatus for personnel detection and tracking including thresholding a gradient response.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J Hesseltine whose telephone number is 703-306-4069. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

rjh
April 18, 2003

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
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